Optimization of a blanching process to reduce the furan level of potato crisps without increasing their oil uptake

Mariotti, Salomé; Granby, Kit

Publication date:
2013

Document Version
Publisher's PDF, also known as Version of record

The Latin American Symposium of Food Science UNICAMP (University of Campinas), Brazil November 3-6 2013.

Optimization of a blanching process to reduce the furan level of potato crisps without increasing their oil uptake.

Mariotti S, Granby K.

Furan, a potential carcinogen, can be formed in foods processed at high temperatures such as coffee, baby foods, bread and crisps. Considering that crisps are characterized by their high worldwide consumption, we decided to improve the chemical food safety of these fried products.

Thus, the objective of this work was to reduce the level of furan in crisps without increasing their oil uptake. To accomplish this purpose a central composite design was used to study the effect of blanching time and temperature on the reduction of reducing sugars, one of furan precursors, in potato slices. After the pre-treaments, potatoes slices were fried at 170°C until reach a 2% of moisture (w.b.) and the impact of both factors (blanching time and temperature) over furan content and oil uptake were evaluated.

Although blanching pre-treatments performed at higher temperatures (80°C) resulted in the lowest levels of both reducing sugar and furan, crisps pre-treated under these conditions presented a significant increasing in their oil content.

On the other hand, blanching at temperature of 65° for 10 min was a 30% more efficient (30 %) in the extraction of reducing sugars compared to blanching at lower temperatures (~50°C) which appeared more time consuming. Additionally, under these blanching conditions a significant furan reduction in crisps was obtained without increasing their oil uptake. This later, may be explained, since blanch at 65°C activate the pectin-methyl-esterase and the resulting reactions would decrease porosity and, therefore reduce oil absorption.

Key words: furan, reducing sugars, blanching, oil uptake.